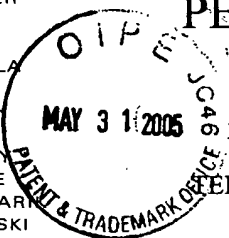


CHARLES B. GORDON  
THOMAS P. SCHILLER  
DAVID B. DEIOMA  
JOSEPH J. CORSO  
HOWARD G. SHIMOLA  
JEFFREY J. SOPKO  
JOHN P. MURTAUGH  
JAMES M. MOORE  
MICHAEL W. GARVEY  
RICHARD A. SHARPE  
RONALD M. KACHMAR  
PAUL A. SERBINOWSKI  
BRIAN G. BEMBENICK  
AARON A. FISHMAN



## PEARNE & GORDON LLP

ATTORNEYS AT LAW

1801 EAST 9th STREET

SUITE 1200

CLEVELAND, OHIO 44114-3108

TEL: (216) 579-1700 FAX: (216) 579-6073

EMAIL: ip@pearnegordon.com

STEPHEN S. WENTSLE  
ROBERT F. BODI  
SUZANNE B. GAGNON  
UNA L. LAURICIA  
STEVEN J. SOLOMON  
GREGORY D. FERNENGEL

### OF COUNSEL

LOWELL L. HEINKE  
THADDEUS A. ZALENSKI

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May 26, 2005

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Re: U.S. Patent Application for  
"AUTOMATIC GAIN CONTROL CIRCUIT AND RECEIVER  
DEVICE HAVING THE AUTOMATIC GAIN CONTROL  
CIRCUIT, AND AUTOMATIC GAIN CONTROL METHOD"  
Serial No.: 09/527,924  
Filed: March 17, 2000  
Patent No.: 6,885,851  
Issue Date: April 26, 2005  
Our Docket: 32429

Certificate  
JUN 1 5 2005  
of Correction

Sir:

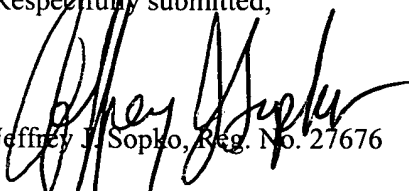
In proofreading the above-referenced patent, typographical errors were noted. It is not believed that these errors require a Certificate of Correction. However, it is respectfully requested that this letter be placed in the file for this case.

The following errors were noted:

Column 4, line 16, after circuit, please insert --,-- (comma).

Column 15, line 58, please delete "FIG.BB" and insert therefor --FIG. 8B--.

Respectfully submitted,

  
Jeffrey J. Sopko, Reg. No. 27676

JJS:vlm  
Enclosure

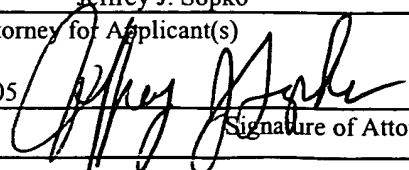
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

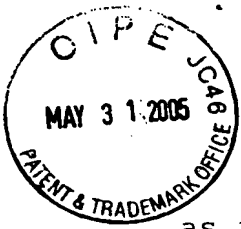
Jeffrey J. Sopko

Name of Attorney for Applicant(s)

May 26, 2005

Date

  
Signature of Attorney



- 8 -

as the predetermined physical quantity.

Further, a computer-readable recording medium according to the present invention records the automatic gain control method mentioned above as a program to be executed by a computer.

5       , In the automatic gain control circuit according to the present invention, when the receiving signal is level-detected by the control signal generating means (control signal generating step) to generate the feedback signal as the control signal for the gain variable amplifier, the generation timing of the control  
10 signal or the generation period of the control signal is decided by the controlling means (controlling step) in response to the predetermined physical quantity.

Accordingly, under various situations such as the case where large variation in the receiving signal level is expected,  
15 the case where small variation in the receiving signal level is caused because the electric field condition is stabilized, or the like, the generation timing or the generation period of the control signal for the automatic gain control loop can be decided by setting the physical quantity to respond to various conditions.  
20 As a result, the follow-up performance of the automatic gain control loop can be optimized in various situations, and thus the good receiving characteristic can be achieved.

Particularly, in the automatic gain control ~~circuit~~ while using address information as the predetermined physical  
25 quantity, information of the generation timing of the control

signal or the generation period of the control signal are held in response to the address information in the look-up table, and then the generation timing or the generation period of the control signal for the gain variable amplifier is decided in answer to  
5 the predetermined physical quantity by referring to the look-up table.

Accordingly, under various situations such as the case where large variation in the receiving signal level is expected at the time of the turn-ON operation of the power supply, the  
10 intermittent receiving operation of the receiver device, the receiving operation in the fading condition, or the like, or the case where small variation in the receiving signal level is caused because the electric field condition is stabilized, the predetermined physical quantity can be set finely by referring  
15 to the look-up table upon optimization of the generation timing or the generation period of the control signal for the automatic gain control loop. Therefore, the follow-up performance of the automatic gain control loop can be optimized under various conditions, and thus the good receiving characteristic can be  
20 achieved correspondingly. Also, update of the method of generating the generation timing or the generation period of the control signal and also the data stored in the table can be performed simply by exchanging the look-up table.

Also, in the automatic gain control circuit according to  
25 the present invention, the generation timing of the control signal

in the loop gain data by the adder 18 is latched by the trigger of the latch timing control signal C2. Therefore, the latch timing control signal C2 can define the generation timing of the control signal GC, and the trigger period of the latch timing control signal C2 coincides with the generation period of the control signal GC.

The automatic gain control circuit according to the third embodiment is characterized in that the generation period (generation timing) of the control signal GC can be decided in accordance with an amount of change in the level-detected output of the demodulated output Rd which is detected by the detected output change amount detecting means (the level detector 14, the averaging portion 15, the latch circuit 22, and the adder 23).

A method of deciding the generation period of the control signal GC which is characterized as above will be explained with reference to FIG.8 hereunder. FIG.8 is a view showing the follow-up performance of the automatic gain control loop of the receiver device. FIG.8A shows the case of the automatic gain control circuit according to the third embodiment, and FIG.8B shows the case of the automatic gain control circuit in the prior art.

First, in the automatic gain control circuit in the prior art shown in ~~FIG.8B~~, since the generation period  $T7$  [s] of the control signal of the automatic gain control is set to a constant value irrespective of the level variation of the automatic gain

control loop, the follow-up performance of the automatic gain control loop against the abrupt variation in the detected level of the received electric field is sometimes degraded.

In contrast, in the automatic gain control circuit  
5 according to the third embodiment, as shown in FIG.8A, since the generation period  $T_n$  [s] of the control signal GC can be decided in answer to an amount of change the electric field detected level by detecting the electric field detected level, it should be understood that the control signal GC can always be generated at  
10 an optimal generation period (generation timing) and thus the follow-up performance of the automatic gain control loop can be improved rather than the prior art.

Operations of the detected output change amount detecting means (the latch circuit 22 and the adder 23) and the control  
15 portion 26 will be explained in detail based on the above explanation.

To begin with, in the initial state when the automatic gain control circuit starts its operation, latch data in the latch circuit 22 may be set arbitrarily to any value, and also a certain  
20 value is output from the gain variable amplifier 11 according to the voltage of the control signal GC output by the automatic gain control loop. As a result, according to the change in the output signal level after the gain of the gain variable amplifier 11 is changed, outputs of the demodulator portion 12, the A/D converter  
25 13, the level detector 14, and the averaging portion 15 are also